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Mr. James Saric
Remedial Project Manager
USEPA Region 5
77 West Jackson Boulevard (SR-6J)
Chicago, IL 60605-3507

SEDIMENTS

Subject:
Kalamazoo River Hot Spot Assessment Core Collection Locations

Dear Mr. Saric:

The *Kalamazoo River Hot Spot Assessment Sampling Plan* (Hot Spot Assessment Plan) (ARCADIS 2009) was approved by the United States Environmental Protection Agency (USEPA) on August 17, 2009. The Hotspot Assessment Plan identifies six locations for "hot spot" assessment activities between the former Georgia-Pacific Mill Lagoons and the Crown Vantage Landfill, the first step of which was a bathymetric survey of the hot spot assessment locations completed by USEPA FIELDs personnel (USEPA 2009). The second step is the identification of core sampling locations based on the bathymetric data and other existing information. This letter presents proposed core collection locations for USEPA approval.

Core Collection Locations

The bathymetric survey was used to develop proposed core collection locations, which were discussed in draft with USEPA and the Michigan Department of Environmental Quality (MDEQ) on October 1, 2009. In that discussion, it was agreed to substitute one hot spot assessment area with another area located further downstream as suggested by MDEQ based on field reconnaissance conducted earlier in 2009. The alternate downstream area is along a near shore "point bar" feature a short distance upstream of transect KRT-8. This location is substituted for the area in the Hot Spot Assessment Plan (ARCADIS 2009) at transect KRT-2. USEPA FIELDs' bathymetric survey did not include the point bar area upstream of KRT-8; however, the proposed core locations have been established in a similar configuration as the upstream hot spot assessment locations. Along the point bar, the first core on a transect will be collected 5 feet from the edge of water; the second

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October 7, 2009
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Our ref:
B0064539.500

core will be collected approximately halfway between the edge of water and the offshore extent of the point bar feature.

Three to 8 cores from each of the hot spot assessment areas will be submitted for polychlorinated biphenyl (PCB) analysis. Core collection locations are shown in Figures 1 through 6. In cases where the original core location that was the basis for selection of the particular area as a hot spot assessment location (as described in the Hot Spot Assessment Plan [ARCADIS 2009]) was collected prior to 2008, those locations will be resampled and are shown with an open blue square (See Figures 1, 2, and 5). For some existing cores, resample core locations are specified either nearer to shore or further offshore relative to the core sample that is the basis for selection as a hotspot assessment area. In cases where a core was previously collected at the proposed location, but not analyzed for PCB, the core locations are also shown with an open blue square (See Figures 3 and 4). The sampled locations will be surveyed (horizontal coordinates and vertical elevation of top of sediment). Additionally, cross-channel bathymetric survey transects will be established at the upstream- and downstream-most transects at the point bar area, as well as the central transect.

The analysis of the core samples will be a two-step process. In the first step, those cores initially selected for analysis will be collected from core locations around and closest to the original core location that was the basis for selection of the particular area for hot spot assessment as described in the Hot Spot Assessment Plan (ARCADIS 2009). In the case of the point bar area upstream of KRT-8 shown in Figure 6, cores from the central three transects will be submitted first for analysis.

If initial cores return a PCB concentration of greater than 50 milligrams per kilogram (mg/kg), then the contingent cores adjacent to core samples with PCB concentrations greater than 50 mg/kg will be analyzed. Table 1 summarizes the number of initial and contingent cores for analysis at each hot spot assessment location.

Core Collection and Analysis

Cores will be collected by hand-driving Lexan tubing into the sediment until refusal, creating a vacuum, and retrieving the core. Each core will be photographed and described using the Unified Soil Classification System.

All core samples will be processed and analyzed in accordance with the methods and protocols described in the USEPA-approved Area 1 SRI/FS Work Plan (ARCADIS BBL 2007a) and Multi-Area Field Sampling Plan (ARCADIS BBL 2007b), as well as prior practice for sample handling and core sectioning for investigatory work completed pursuant to the *Kalamazoo River SRI Phase 2 Sediment Core Analyses Plan* (ARCADIS 2008). Core sectioning intervals will be varied as necessary to represent visually-distinct strata, where present. Samples from the cores to be initially analyzed will be submitted for PCB, total organic carbon, and particle size distribution analysis. The contingent core samples will be held in frozen storage at TestAmerica pending results of the initial sets of cores. Once PCB results for the initial sets of cores are available, samples from the adjacent cores that require analysis based on the PCB concentrations of the initial cores will be released from frozen storage and submitted for laboratory analysis.

Schedule

In accordance with the scope of work, USEPA was notified via email on September 22, 2009 of our intention to complete sampling activities between October 19 and October 30, 2009. The schedule is contingent upon approval of this sampling plan by USEPA. Detailed daily or weekly work schedules will be established in coordination with USEPA's oversight contractor following approval of this sampling plan.

Sincerely,

ARCADIS



Michael J. Erickson, P.E.
Associate Vice President

Copies:

John Bing-Canar, USEPA FIELDS
Chuck Roth, USEPA FIELDS
Paul Bucholtz, MDEQ
Jeff Keiser, CH2M HILL
Todd Goeks, NOAA
Garry Griffith, P.E., Georgia-Pacific LLC
L. Chase Fortenberry, P.G., Georgia-Pacific LLC
Mark Brown, PhD, Waterviews, LLC

Martin Lebo, PhD, Weyerhaeuser NR Company

Enclosures:

Tables

Table 1 – Summary of Proposed Sediment Cores

Figures

Figure 1 - Proposed Hot Spot Assessment Probing Locations: KPT19

Figure 2 - Proposed Hot Spot Assessment Probing Locations: KPT20

Figure 3 - Proposed Hot Spot Assessment Probing Locations: KRT4

Figure 4 - Proposed Hot Spot Assessment Probing Locations: KRT5 and FF19

Figure 5 - Proposed Hot Spot Assessment Probing Locations: KPT23

Figure 6 – Proposed Hot Spot Assessment Probing Locations: Point Bar Area Upstream of KRT-8

References

ARCADIS BBL. 2007a. *Supplemental Remedial Investigation/Feasibility Study Work Plan – Morrow Dam to Plainwell*. February 2007.

ARCADIS BBL. 2007b. *Multi-Area Field Sampling Plan*. October 2007.

ARCADIS 2008. *Kalamazoo River SRI Phase 2 Sediment Core Analyses Plan*. November 2008.

ARCADIS 2009. *Kalamazoo River Hot Spot Assessment Sampling Plan*. August 2009.

USEPA 2009. *USEPA FIELDS Bathymetric Study Kalamazoo River*. August 25, 2009.

**Kalamazoo River Study Group
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Supplemental Remedial Investigations/Feasibility Studies
Kalamazoo River Hot Spot Core Collection Locations**

Table 1 - Summary of Proposed Sediment Cores

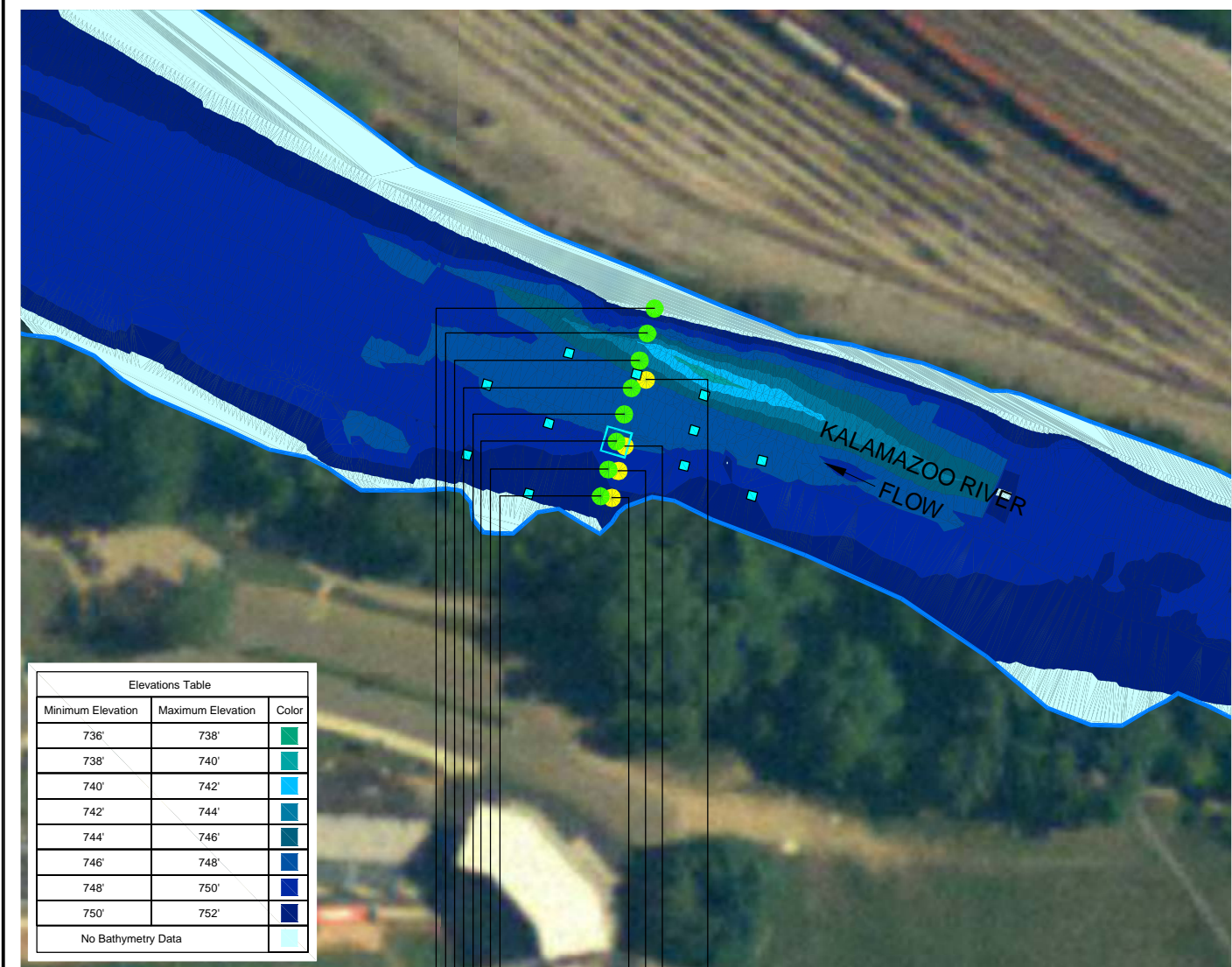
Hot Spot Area	Number of Cores for Analysis ¹	
	Initial	Contingent ²
KPT19	8	4
KRT20	3	2
KRT4	5	4
KRT5 and FF19	7	3
KPT23	5	4
Point bar area upstream of KRT-8	6	2
Total	34	19

Notes:

1. Samples will be submitted for PCB, total organic carbon, and particle size distribution analysis.
2. Contingent cores will be selected for analysis if PCB results from adjacent cores are greater than 50 mg/kg.

CITY: SYRACUSE DIV/GRP: 141/ENV DB: LUP LD: Opt PIC: Opt PM: MERICKSON TM: Opt LYR: (Option: "OFF" = REF) LVS: 10/7/2009 8:27 AM ACADVER: 17.05 (LMS TECH) PAGES: 17 PLT: PLT01.DWG LAYOUT: 10/7/2009 11:28 AM BY: POSENAUER, LISA

64539X02 KALAMAZOO_SE.ecw
64539X00 KALAMAZOO_SW.ecw
64539X99 KPT19.jpg



Elevations Table		
Minimum Elevation	Maximum Elevation	Color
736'	738'	Light Green
738'	740'	Green
740'	742'	Light Blue
742'	744'	Blue
744'	746'	Dark Blue
746'	748'	Very Dark Blue
748'	750'	Dark Purple
750'	752'	Black
No Bathymetry Data		White

KPT19-8	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.37
0.17 - 1	0.54
1 - 1.67	0.054 J
1.67 - 2	0.085 U

KPT19-7	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.059 J
0.17 - 0.5	0.28
0.5 - 1	0.54
1 - 2	1.8
1 - 2	1.2

KPT19-6	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.54
0.17 - 0.5	0.43
0.5 - 1	0.3
1 - 2	0.54
1 - 2	0.59

KPT19-5	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.034 J
0.17 - 1	0.16 J
1 - 2	0.34

KPT19-1	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	6.6
0.17 - 0.5	10
0.5 - 1	1.4
1 - 1.42	0.3

KPT19-2	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.21
0.17 - 0.67	0.68
0.67 - 1.17	1.5
1.17 - 1.5	0.31 J
1.5 - 2	0.43 J
1.5 - 2	0.71 J

KPT19-3	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.5	0.063 U
0.5 - 1.5	0.030 J
1.5 - 1.9	0.050 J
1.9 - 2.5	0.25
2.5 - 3.5	3.1
3.5 - 4.5	82
4.5 - 4.9	59

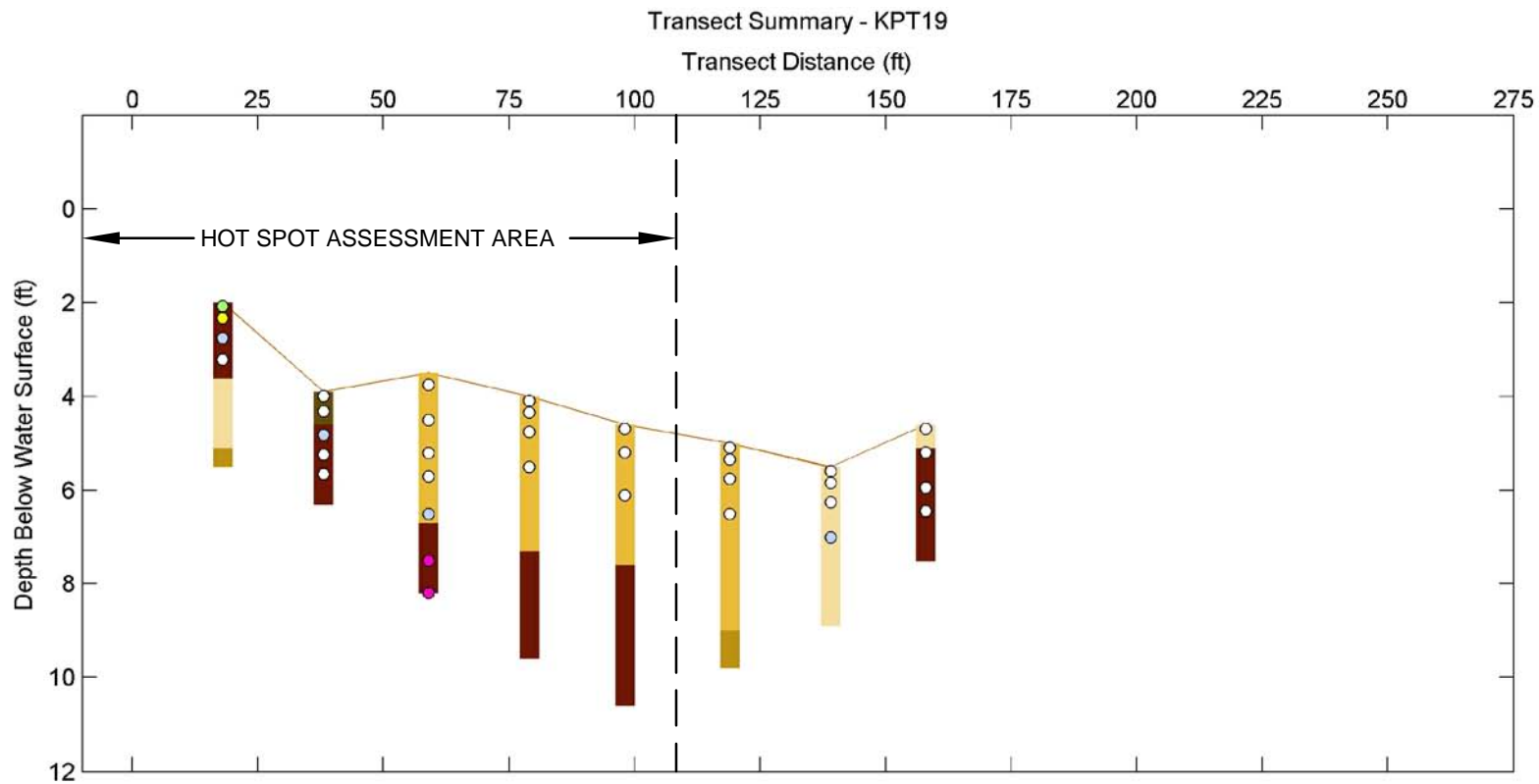
KPT19-4	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.21 J
0.17 - 0.5	0.23 J
0.5 - 1	0.27 J
1 - 2	0.81
1 - 2	0.46

KP2C-9	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.082 J
0 - 0.17	0.14 J
0.17 - 0.5	0.38 J
0.5 - 1	0.067 J

KP2F-3	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.097 J
0 - 0.17	0.061 J
0.17 - 0.5	0.19 J
0.5 - 1	0.079 J

KP2F-4	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.22 J
0 - 0.17	0.30 J
0.17 - 0.5	1.9 J
0.5 - 1	0.30 J

KP2F-5	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	8.1
0 - 0.17	1.0 J [2.0 J]
0.17 - 0.5	7.5
0.5 - 1	2.0 J

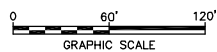


- LEGEND:
- SEDIMENT 2000 (Yellow dot)
 - SEDIMENT 1993 (Green dot)
 - SHORELINE (Blue line)
 - PROPOSED SAMPLE LOCATIONS (Blue square)
 - RESAMPLE LOCATION (Light blue square)

PROPOSED CORE ANALYSIS	
INITIAL CORES:	8
CONTINGENT CORES:	4

NOTES:

- BASEMAP FROM THE MICHIGAN CENTER FOR GEOGRAPHIC INFORMATION. SHORELINE DIGITIZED FROM AERIAL IMAGERY COLLECTED IN 2000.
- AERIAL IMAGE DERIVED FROM THE 2005 NATIONAL AGRICULTURE IMAGERY PROGRAM STATEWIDE IMAGERY ACQUISITION.
- BATHYMETRY DATA SURVEYED BY USEPA FIELDS, JULY 2009. THE SURVEY DID NOT ALWAYS EXTEND THE FULL WIDTH OF THE RIVER TO THE WATER'S EDGE.
- J = ESTIMATED VALUE
- U = NOT DETECTED
- [] INDICATES DUPLICATE SAMPLE

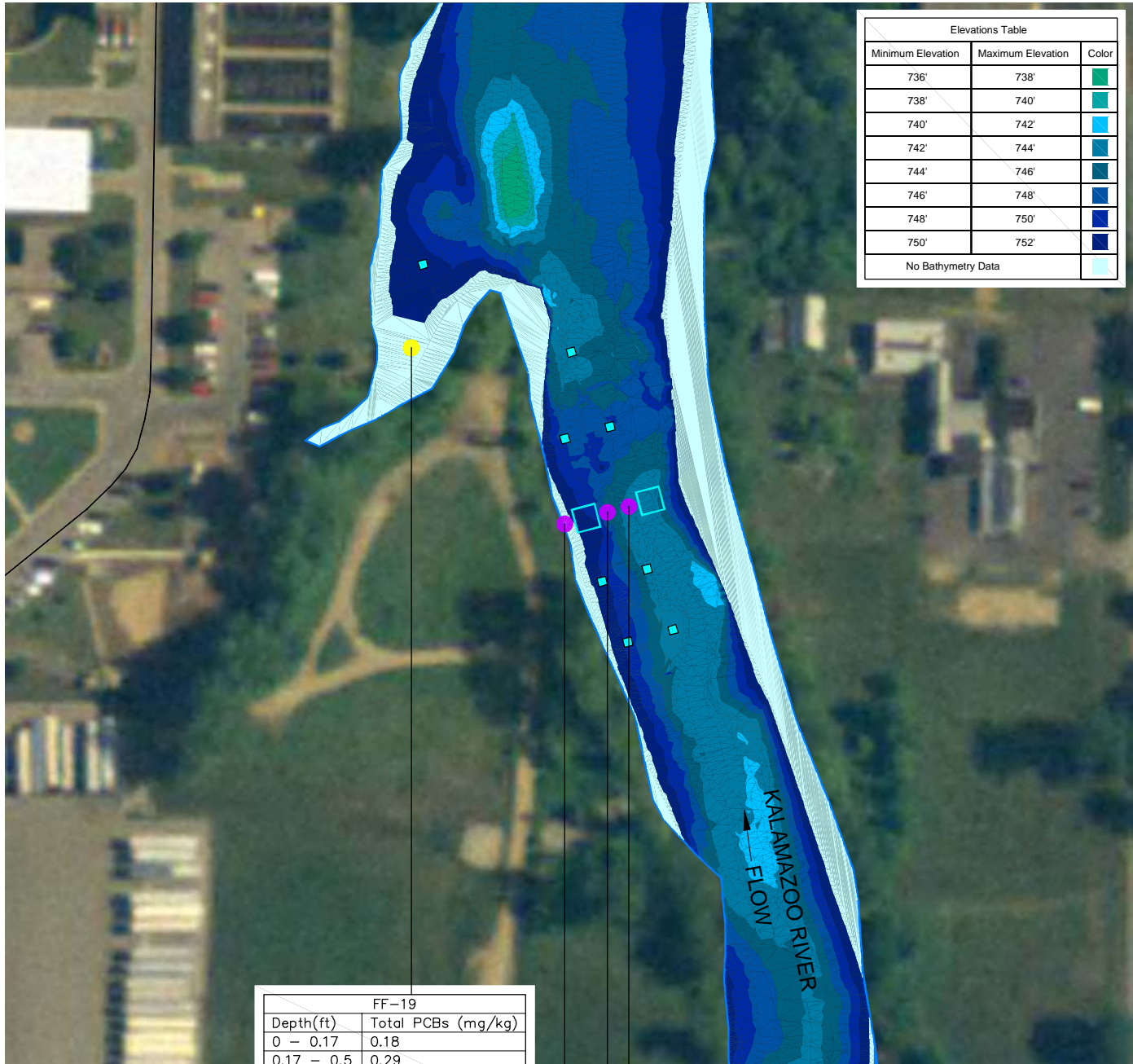


KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
**KALAMAZOO RIVER HOT SPOT ASSESSMENT
CORE COLLECTION LOCATIONS**

**PROPOSED HOT SPOT ASSESSMENT
PROBING LOCATIONS: KPT19**



FIGURE
1



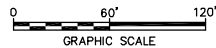
FF-19	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.18
0.17 - 0.5	0.29
0.5 - 0.83	27
0.83 - 2	1.5

KRT5-1	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.72
0.17 - 0.5	0.97
0.5 - 1	0.28 J
1 - 1.8	0.049 J

KRT5-3	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	1.1
0.17 - 0.5	2
0.5 - 1	3.8
1 - 2	120 J [120 J]
2 - 3	100
3 - 4	37

KRT5-4	
Depth(ft)	Total PCBs (mg/kg)
0 - 0.17	0.56
0.17 - 0.5	0.25 J
0.5 - 1	2.8 J
1 - 2	210
2 - 2.7	200

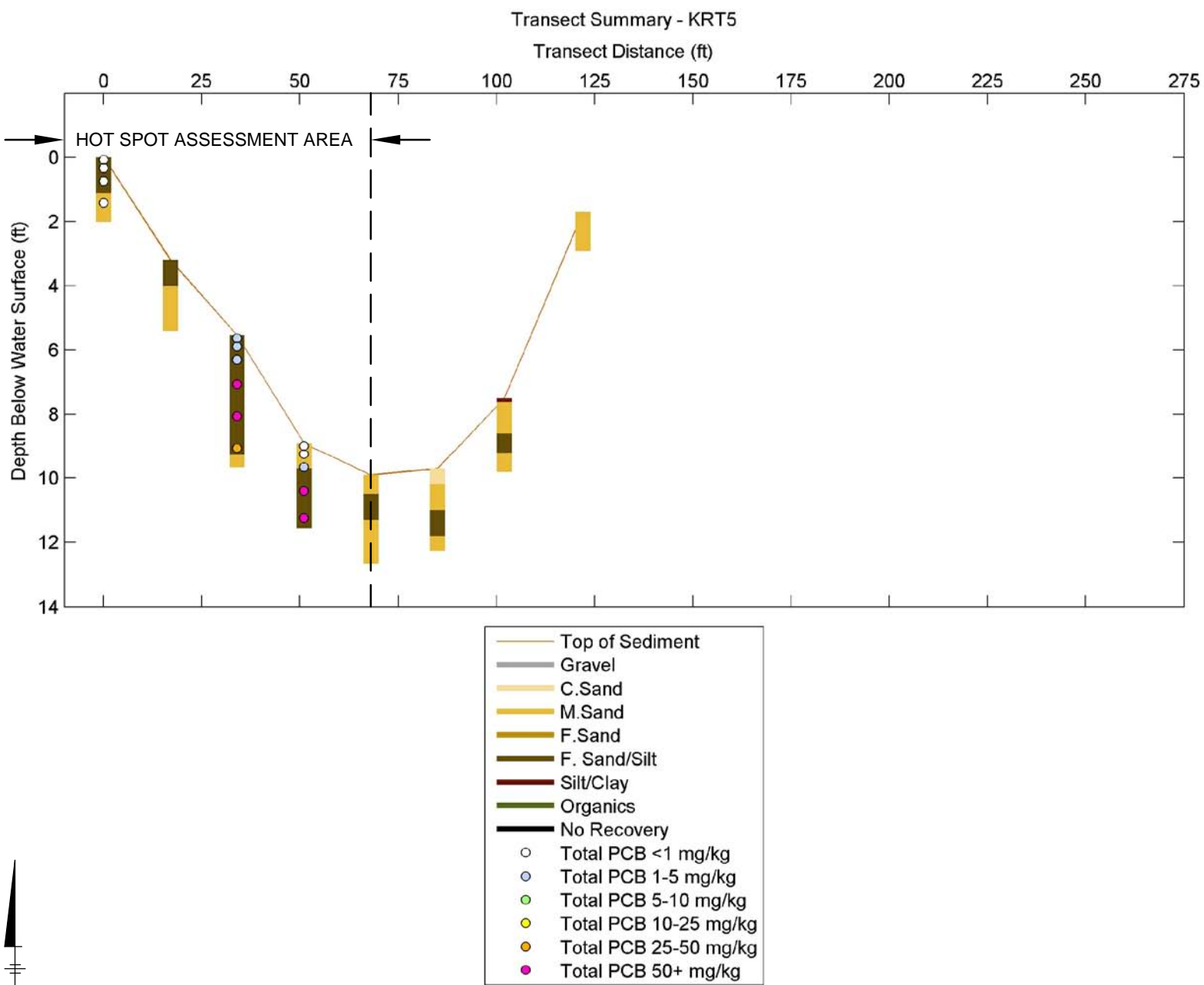
- NOTES:**
- BASEMAP FROM THE MICHIGAN CENTER FOR GEOGRAPHIC INFORMATION. SHORELINE DIGITIZED FROM AERIAL IMAGERY COLLECTED IN 2000.
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PROPOSED CORE ANALYSIS

INITIAL CORES: 7

CONTINGENT CORES: 3



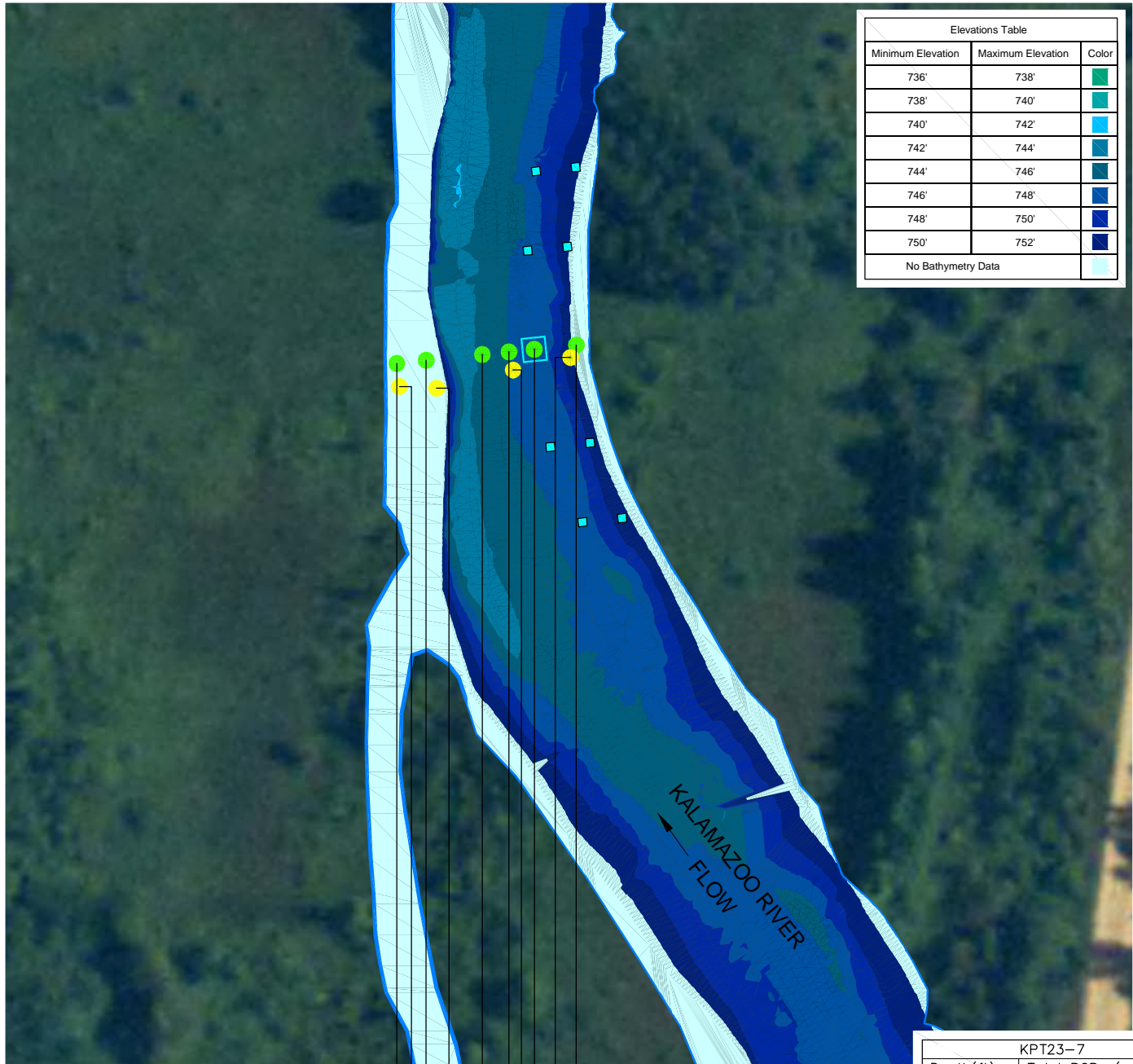
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KALAMAZOO RIVER SUPERFUND SITE
**KALAMAZOO RIVER HOT SPOT ASSESSMENT
CORE COLLECTION LOCATIONS**

**PROPOSED HOT SPOT ASSESSMENT
PROBING LOCATIONS: KRT5 AND FF19**



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Elevations Table		
Minimum Elevation	Maximum Elevation	Color
736'	738'	Light Green
738'	740'	Green
740'	742'	Light Blue
742'	744'	Blue
744'	746'	Dark Blue
746'	748'	Very Dark Blue
748'	750'	Dark Blue
750'	752'	Very Dark Blue
No Bathymetry Data		White

KPT23-1		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.21 J	
0.17 - 0.83	1.8	

KP3F-3		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	2.5	
0.17 - 0.5	1.8	
0.5 - 0.92	0.28 J	

KPT23-2		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	1.2 J	
0.17 - 0.5	0.81	
0.5 - 0.75	0.99 J	

KP3F-2		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.93	
0 - 0.17	0.64 J	
0.17 - 0.5	0.35 J	
0.5 - 0.83	0.55	

KP3C-4		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.11 U	
0 - 0.17	0.21	
0.17 - 0.5	0.0083 J	
0.5 - 1	0.070 U	

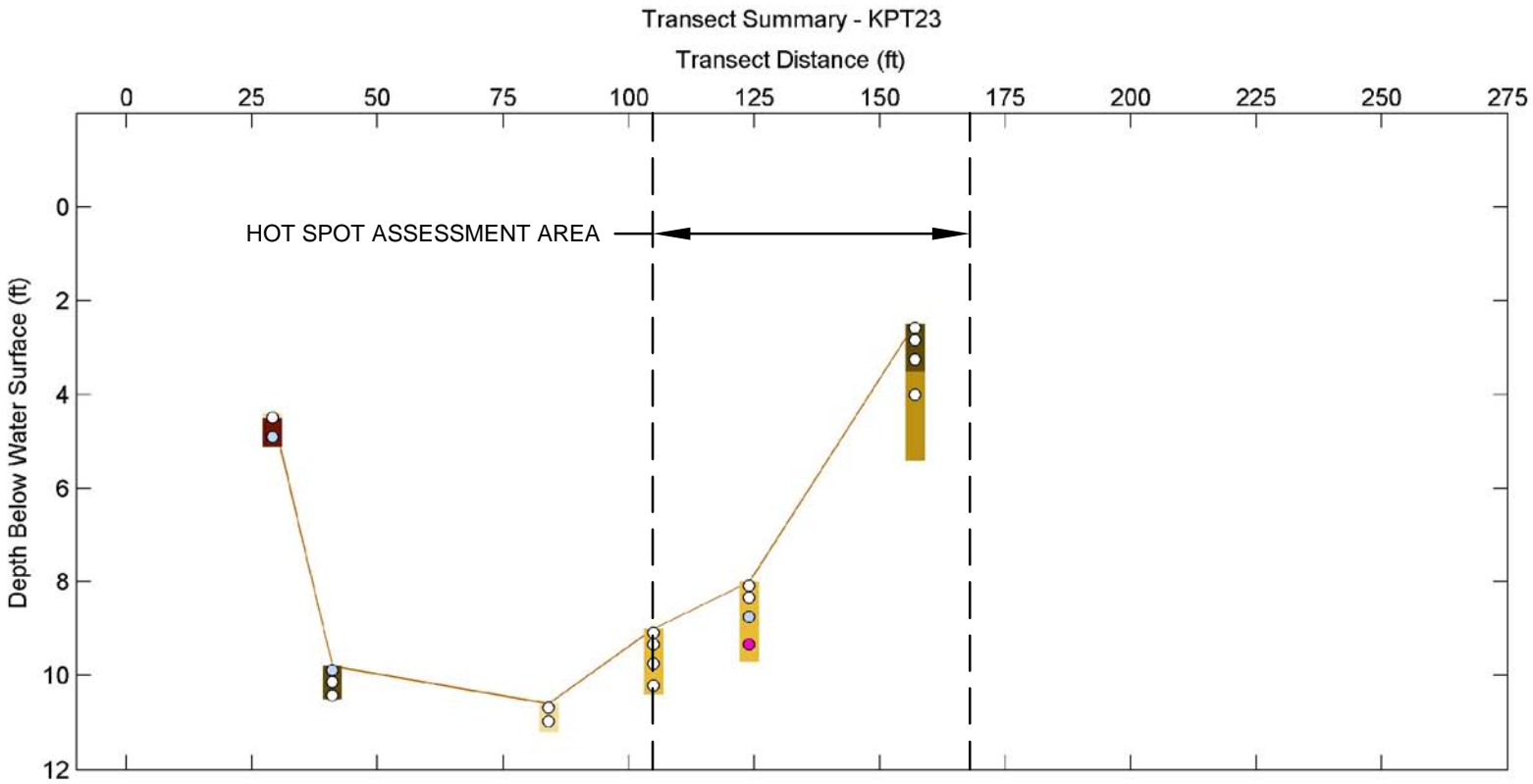
KP3C-5		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.077	
0 - 0.17	0.62 J	
0.17 - 0.5	0.35 J	
0.5 - 1	0.88 J	

KPT23-4		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.59 J	
0.17 - 0.58	0.26	

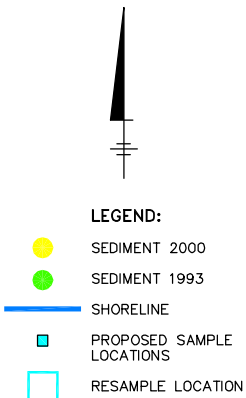
KPT23-7		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.16 J	
0.17 - 0.5	0.12 U	
0.5 - 1	0.076 U	
1 - 2	0.061 U	
1 - 2	0.061 U	

KPT23-6		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.67	
0.17 - 0.5	0.79	
0.5 - 1	3.7	
1 - 1.67	67	

KPT23-5		
Depth(ft)	Total PCBs (mg/kg)	
0 - 0.17	0.68 J	
0.17 - 0.5	0.39	
0.5 - 1	0.71 J	
1 - 1.42	0.87	
1 - 1.42	0.54	



Top of Sediment	Gravel
C.Sand	M.Sand
F.Sand	F. Sand/Silt
Silt/Clay	Organics
No Recovery	Total PCB <1 mg/kg
	Total PCB 1-5 mg/kg
	Total PCB 5-10 mg/kg
	Total PCB 10-25 mg/kg
	Total PCB 25-50 mg/kg
	Total PCB 50+ mg/kg



LEGEND:

- SEDIMENT 2000
- SEDIMENT 1993
- SHORELINE
- PROPOSED SAMPLE LOCATIONS
- RESAMPLE LOCATION

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PROPOSED CORE ANALYSIS

INITIAL CORES: 5
CONTINGENT CORES: 4

KALAMAZOO RIVER STUDY GROUP
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**KALAMAZOO RIVER HOT SPOT ASSESSMENT
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**PROPOSED HOT SPOT ASSESSMENT
PROBING LOCATIONS: KPT23**



FIGURE

5

